

Briefing Paper

Childhood Nutrition and Physical Activity in the Schools: Background Briefing

This paper was a collaboration among authors from the Center for Public Health Nutrition, the NIH Schools Grant Team, Public Health-Seattle & King County, the Washington State Department of Health, and the Office of Superintendent of Public Instruction.

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Number 6
November 13 & 14, 2003

*Supported by the Robert Wood Johnson Foundation, the Washington Health Foundation,
and the Center for Public Health Nutrition.*

Introduction

Dietary Guidelines for Americans

Aim for Fitness

- Aim for a healthy weight
- Be physically active every day

Build a Healthy Base

- Let the food guide pyramid guide your food choices
- Choose a variety of grains daily, especially whole grains
- Choose a variety of fruits and vegetables daily
- Keep food safe to eat

Choose Sensibly

- Choose a diet that is low in saturated fat and cholesterol and moderate in total fat intake
- Choose beverages and foods to moderate your intake of sugars
- Choose and prepare foods with less salt
- If you drink alcoholic beverages, do so in moderation

— U.S. Department of Agriculture/
U.S. Department of Health
and Human Services

The prevalence nationwide of overweight and obese adults and children is increasing at an alarming rate. Fifteen percent of children and adolescents aged 6-19—almost nine million children—were overweight in 1999-2000, triple the proportion in the years 1976-1980 (1).

At the same time waistlines have been increasing, so have fast food and soft drink consumption and portion sizes (2). Recent research indicates that fast food consumption now accounts for more than 40% of a family's budget spent on food (2). Soft drink consumption supplies the average teenager with over 10% of his or her daily caloric intake (2).

The common measure used to express the relationship between weight and height for both adults and children is BMI, or body mass index, a formula that calculates weight adjusted for height. Children are classified as *overweight* if their BMI for their age (*BMI-for-age*) is ≥95th percentile when plotted on gender-specific Centers for Disease Control and Prevention (CDC) growth charts. If their BMI-for-age is between the 85th and 95th percentile, they are classified as *at risk for overweight*. *Obesity* is not a term used to describe excess body fat for children, adolescents, and young adults aged 2-20.

In 1999, about 7% of Washington State youth in grades 9-12 were overweight, and another 14% were at risk for being overweight (3).

The 2002 national *Youth Risk Behavior Surveillance Survey (YRBSS)* indicates that many youth in Washington, and across the nation, fail to meet minimum dietary and physical

activity guidelines (4). The *Dietary Guidelines for Americans* developed by the U.S. Departments of Agriculture (USDA) and Health and Human Services (DHHS) recommend using the food guide pyramid to guide food choices. They also recommend choosing a variety of grains, fruits, and vegetables daily; a diet that is low in saturated fat and cholesterol; and foods and beverages with less sugar and salt (5). In 2002, 79% of youth in grades 9-12 nationwide were not consuming five or more servings of fruits and vegetables per day, as recommended in the food guide pyramid. Of the vegetables they did eat, potatoes were among the most common (4).

National physical activity recommendations for adolescents and elementary school-aged children differ by age group, but all emphasize that young people should be physically active nearly every day.

Poor nutrition and physical activity habits among children increase their risk for becoming overweight or obese adults. Their risk for chronic disease, such as Type 2 diabetes mellitus, also rises (6). Research has shown that children's cognitive development and academic achievement are also strongly linked to proper nutrition and adequate levels of physical activity (7,8).

As a center point in children's lives and the community, schools are uniquely positioned to enhance student learning by promoting and supporting healthy behaviors. Recent surveys suggest that many Americans believe schools should play a major role in stemming rising rates of overweight children (9).

Childhood Nutrition in the Schools

National School Lunch Program and the School Breakfast Program

The National School Lunch Act of 1946, amended numerous times since its inception, authorized the National School Lunch Program (NSLP). The Child Nutrition Act of 1966, enacted in response to an anti-hunger initiative of the Lyndon B. Johnson administration, established the School Breakfast Program (SBP). These two childhood nutrition programs, along with others established by the two statutes, are currently being reauthorized by Congress.

The NSLP and the SBP are meal programs administered at the Federal level by the Food and Nutrition Service of the USDA. The programs are implemented at the State level by state education agencies operating through agreements with school food authorities. Schools that choose to take part in the meal programs get cash subsidies and donated commodities (lunch only) from the USDA for each meal they serve.

Although decisions about what specific foods to serve and how they are prepared are made by local school food authorities, they must serve meals that meet Federal nutrition standards and they must offer free and reduced-price meals to eligible children. State education agencies, such as the Office of Superintendent of Public Instruction (OSPI) in Washington, have the authority to enforce applicable Federal regulations.

Any child in a participating school may purchase a school meal sponsored by these two programs. Children from families with incomes

at or below 130% of the federal poverty level (FPL) are eligible for free meals. Those with incomes between 130% and 185% FPL are eligible for reduced-price meals.

In the past 20 years, enrollment in public schools has increased by 6.8%, but participation in the NSLP has decreased by 1.2% (10). The School Health Policies and Programs Study (SHPPS) is a national survey conducted every six years by the CDC that assesses school health policies and programs at the national, state, school district, school, and classroom levels. According to this survey, 88% of public and not-for-profit private schools nationwide participate in the NSLP, accounting for nearly 28 million participants per school year (11,12).

In Washington State 488,117 students participated in the National School Lunch Program during the 2002 school year (3).

Federal School Food Standards

School meals must be consistent with the *Dietary Guidelines for Americans*, which recommend that no more than 30% of one's calories come from fat and less than 10% from saturated fat. Breakfasts must provide 1/4th of the Recommended Dietary Allowances (RDA) of protein, Vitamin A, Vitamin C, iron, calcium, and calories. Lunches must provide 1/3rd of these RDAs as well as 1/3rd of the calorie needs by age/grade group.

To achieve these nutritional requirements, schools can plan their meals using one of two methods:

- **Food-based Menu Planning (Traditional and Enhanced)** requires that schools offer five food items from four food group components: one

serving of meat/meat alternate, grains/breads, and milk; two servings of vegetables and/or fruits. The *Traditional* approach was used before the *Dietary Guidelines* became part of the school meal requirements. Consequently, there is no built-in mechanism to ensure that meals served under this approach comply with these guidelines.

The *Enhanced* approach is similar to the *Traditional* approach, but includes increased servings of vegetables and/or fruits and grains/breads to ensure compliance with the *Dietary Guidelines*.

- **Nutrient Standard Menu Planning** requires that, when averaged over the school week, the menu provide the minimum nutrient and calorie levels listed above and meet the *Dietary Guidelines*.

Offer vs. Serve (OVS) Serving Method

OVS is a serving method designed to reduce food costs and plate waste and to allow students the opportunity to make choices in the foods they intend to eat. OVS is required by federal law for grades 9-12 for both breakfast and lunch. OVS is a local option in elementary and junior high/middle schools. Children are allowed to decline food items depending on the menu planning approach taken by the school. For example, if lunches are prepared using either *Traditional* or *Enhanced* menu planning, children may decline two of the five food items. For Nutrient Standard Menu Planning, children may decline menu items other than the entree, the number of which

depends on the number of offerings.

For breakfast, a child may decline one item regardless of which menu planning option is used. Regardless of how many of the allowed number of food items are declined, the price charged for the meal remains the same. Schools that do not choose the OVS option must serve all food menu items to all students.

Advantages to Using the NSLP and SBP

- **Proper nutrition enhances the health and well-being of the child.** Research indicates that NSLP participants have substantially lower intakes of added sugars than do non-participants and are more likely than non-participants to consume vegetables, milk and milk products, and meat and other protein-rich foods, both at lunch and over 24 hours (13).
- **Proper nutrition contributes to academic performance.** Research conducted by the Center on Hunger and Poverty indicates that poor nutrition in children can lead to behavioral problems, poor academic performance, frequent medical care, and poor health outcomes (14). Given the number of hours many children are in school, access to food at school could alleviate some of the learning problems faced by poorly nourished children. In addition, improved nutrition results in better health—and children perform better at school, miss fewer school days, and behave better (7).

Challenges to Maximizing the Potential of NSLP & SBP

Schools and local school food authorities encounter many challenges in trying to serve children meals. Two challenges are inadequate meal periods and inadequate food service facilities.

- **Inadequate meal periods.** The pressure on schools for academic

performance continues to increase. In an attempt to provide additional classroom time during the existing school day, schools—particularly high schools—frequently reduce the length of meal periods. Consequently, children choose foods they can get and eat quickly or skip meals altogether (10).

- **Adequacy of food service facilities.** Food service facilities are often inadequate for preparing and serving appealing school meals. With inadequate dining facilities and insufficient time to eat, many students turn to foods that are readily accessible in vending machines, student stores, and snack bars (10,15).

Other challenges include the time available for preparing and serving meals and the cost of serving healthful food (16).

Strategies for Improving the School Nutrition Environment

We make choices about what to eat based on several factors: taste, perceived value (price and portion size), and perceived nutrition, as well as availability and marketing (17). Improving the quality, variety, and acceptability of school meals would encourage children to make better choices while at school (15). Improving the scheduling of school meals, including the timing of meal service as well as the timing in relation to recess or play, can also be an effective approach for creating a healthy school environment (15).

Foods Sold in Competition with School Meal Programs

Foods sold to children in food service areas during designated breakfast or lunch periods in competition with the USDA-provided school meal programs are called *competitive foods* (10). Competitive foods include foods

purchased off campus; *a la carte* sales in the school; foods sold in vending machines, school stores, canteens, and snack bars; fundraising food sales; foods at school parties; and treats given by teachers to students (18).

The USDA defines two categories of competitive foods:

- Foods of minimal nutritional value (FMNV)
- All other foods offered for individual sale

Section 10(a) of the Child Nutrition Act directs the USDA to regulate the service of foods in competition with NSLP and SBP meals. The USDA has delegated regulatory authority to state education agencies and local school food authorities to establish rules or regulations, as necessary, to control the sale of competitive foods. At a minimum, the rules or regulations must prohibit the sale of FMNV in food service areas during meal periods.

Section 10(b) of the Child Nutrition Act permits schools to sell competitive foods (which include foods other than FMNV) within food service areas during meal periods if the proceeds are intended to benefit the school, student organizations, or the school's food service account. Many schools, for example, depend on profits from *a la carte* foods offered by school food service programs. These foods are not required to meet any nutritional guidelines. Ninety-six percent of high schools nationwide offer *a la carte* foods, and 85% of high school *a la carte* areas offer higher fat food choices (19).

The Child Nutrition Act has no specific authority directing the USDA to regulate the sale of foods outside of food service areas during meal periods. Current federal and state regulations also do not prohibit the

sale of any kind of foods outside of food service areas—that is, anywhere on the school campus—at *any* time during the school day. And any food can be sold *within* food service areas at any time of day *other* than meal periods.

The USDA has authorized state education agencies and local food authorities to impose additional restrictions on the sale of competitive foods, but the Act does not specify what conditions make such rules and regulations necessary, nor does it require state education agencies to impose sanctions when a school's competitive food practices are found to violate regulatory requirements.

According to the 2000 SHPPS, 43% of elementary and up to 98% of senior high schools nationwide offered access to vending machines or had school stores. Sixty-eight percent of these schools allowed students to buy items during the lunch period. Sixty-four percent of the foods available in the vending machines were high-fat, salty snacks; 18% were fruits and vegetables (12).

Why Competitive Foods are Attractive to Schools

Competitive foods provide a variety of food options for students, teachers, and staff. As state and local budgets are trimmed, revenue from the sale of competitive foods provides much-needed financial resources to fund student activities and programs, and many feel that these sources should be protected (20). Exclusive “pouring rights” contracts with beverage companies, such as the Coca-Cola Company or PepsiCo, provide school districts with a source of additional income that can be used at their discretion (10).

Concerns About Competitive Foods

The sale of competitive foods puts schools in the position of

competing with their own school meal programs for revenue. The viability of meal programs is challenged when participation declines, resulting in loss of revenue (10).

Recent research indicates that many of the competitive foods sold on school campuses today are high in sugar and fat and contain multiple servings per container (21). Children who frequently consume energy-dense foods can consume energy in excess of need and increase their diet-related health risks. In one study, students attending schools where competitive foods were sold consumed 50% less fruit and 25% less total fruit, juice, and vegetables during school in comparison with their peers attending schools without competitive foods (22).

The sale of competitive foods conveys a mixed message to children. Positive nutrition messages taught in the classroom are not reinforced when low-nutrient-dense foods are offered at the same time as more healthful food options (10).

Strategies for Improving the Quality of Competitive Foods

Including healthful food options in vending machines is one approach to improving the quality of competitive foods. Schools that have done this have maintained their revenue and in some cases increased their vending profits (18,23). Another strategy is to create and adopt food and beverage standards that ensure that foods and beverages available on school campuses and at school events contribute to the recommendations outlined in the *Dietary Guidelines*. The standards would apply to all foods sold on school grounds, including foods and beverages available from vending machines, school stores, sports events, and *a la carte* items sold in school cafeterias (24,25).

U.S. Surgeon General's Call to Action School Nutrition Highlights

- Meals meet nutrition standards
- All foods in school contribute to diets consistent with *Dietary Guidelines for Americans*
- Healthy snacks in vending machines & school stores
- Prohibit access to venues that compete with school meals
- Provide adequate time for eating
- Schedule lunch around mid-day
- Ongoing, systematic process to assess the school environment
- Evaluate financial & health impact of school contracts with vendors of high-calorie foods & beverages of minimal nutritional value

— U.S. Department of Health and Human Services

Physical Education and Physical Activity in the Schools

As the number of youth who are overweight continues to rise, participation in school-based physical education (PE) has been decreasing. According to the national YRBSS, 32% of students in grades 9-12 participated in daily physical education nationwide in 2001, down from 42% in 1991 (4).

These data raise the question: Are fewer school-based PE programs being offered to students? Many states have established PE requirements for the schools. Washington State, for example, has mandatory PE requirements for grades K-8 in public schools.

Some states follow national standards, such as the *National Standards for Physical Education* developed by the National Association for Sport and Physical Education (26).

Even though national and state guidelines for PE in the schools exist, not all schools follow them. Data from the 2000 SHPPS indicate that 79% of senior high, 77% of middle/junior high, and 84% of elementary schools nation-wide followed national or state PE standards or guidelines (12). Yet this same study revealed that 94% of senior high and 97% of both middle/junior high and elementary schools required students to take physical education (12).

Despite what appears to be a high proportion of schools requiring PE, studies show that many students are not meeting national physical activity recommendations. And student activity level has not increased since 1999: Nationally, about 27% of students in grades 9-12 in that year participated in some sort of physical activity that made them sweat or

breathe hard for at least 30 minutes, five or more times per week in that year; 26% did so in 2002 (4). About 55% of students in both 1999 and 2001 participated on two or more sports teams in one year (4).

Washington State's physical education requirements are intended to provide physical activity opportunities for both adolescents and elementary school-aged children so they are able to meet their age-related recommendations for physical activity. Not all schools in Washington, however, provide physical education at levels that meet the Washington State requirements. According to the Washington State Board of Education, 63% of 135 school districts surveyed in the state were not compliant with the state mandate for PE for students in grades 1-8 (27).

With the risk of inactivity in youth leading to inactivity in adulthood, and both contributing to increased rates of obesity, it is important to examine the gap between the intent to provide physical activity in the schools and levels of participation.

National Recommendations Recommendations for Adolescents

The *International Consensus Conference on Physical Activity Guidelines for Adolescents* recommends that "all adolescents...be physically active daily, or nearly every day, as part of play, games, sports, work, transportation, recreation, physical education, or planned exercise, in the context of family, school, and community activities." Additionally, the guidelines recommend that "adolescents engage

in three or more sessions per week of activities that last 20 minutes or more at a time and that require moderate to vigorous levels of exertion."

Recommendations for Elementary School Students

The *National Association for Sport and Physical Education* states that elementary school-aged children should accumulate at least 30 to 60 minutes of age- and developmentally appropriate physical activity from a variety of physical activities on all or most days of the week.

Washington State Physical Education Requirements

Physical Education Requirements in Washington State Law

Grades 1-8: "An average of at least one hundred instructional minutes per week per year in physical education shall be required of all pupils in the common schools in the grade school program (grades 1-8)."

Grades 9-12: "A one-credit course or its equivalent shall be offered in physical education for each grade in the high school program (grades 9-12)."

Washington State Board of Education Common School Provision Regarding Physical Education (27)

Grades 1-8: "Every pupil attending grades one through eight of the public schools shall receive instruction in physical education as prescribed by rule or regulation of the state board of education: provided, that individual pupils or students may

be excused on account of physical disability, religious belief or participation in directed athletics.”

Grades 9-12: “All high schools of the state shall emphasize the work of physical education, and carry into effect all physical education requirements established by rule or regulation of the state board of education: provided, that individual students may be excused from participating in physical education otherwise required under this section on account of physical disability, employment or religious belief, or because of participation in directed athletics or military science and tactics or for other good cause.”

Essential Academic Learning Requirements (EALRs) – Health and Fitness (28)

Washington State’s Essential Learning Requirements (EALRs) were created by the Washington State Commission on Student Learning to define expectations for student achievement in eight academic areas, including health and fitness. The Health and Fitness EALRs establish the concepts and skills necessary for safe and healthy living and, in turn, for successful learning. Each Health and Fitness EALR is supported by recommendations for meeting the standard. The standards are:

- 1. The student acquires the knowledge and skills necessary to maintain an active life: movement, physical fitness, and nutrition
- 2. The student acquires the knowledge and skills necessary to maintain a healthy life: recognize patterns of growth and development, reduce health risks, and live safely
- 3. The student analyzes and evaluates the impact of real-life influences on health
- 4. The student effectively analyzes health and safety information to

develop health and fitness based on life goals

The assessment schedule for the Health and Fitness EALRs, as measured through the Washington Assessment of Student Learning (WASL), is outlined in Table 1.

Benefits of Physical Education and Physical Activity in Schools

Physical activity supports academic achievement in several ways. School-based physical activity can result in increases in concentration, short-term memory, and creativity; a reduction in disruptive behaviors; improved mental health status; and improved math and reading scores (29,30,31). A review of studies on the impact of adding time for physical activity in schools found that academic performance per unit of class time is enhanced by taking time away from classroom teaching for physical activity (29).

Concerns about Physical Education Regulations for Schools

Concerns about mandating time for physical education in schools include the additional costs of hiring qualified physical education teachers; time that physical education would

take from academic subjects; the finding that some children and youth are very active in sports outside of the school day and may not benefit from universal physical education requirements; and interference with local control of decisions in schools (32,33).

Strategies for Increasing Physical Activity Outside of the Schools

Programs that promote physical activity outside of regular school time help respond to some of the concerns schools have regarding PE/PA mandates. Walk-to-School Programs in many communities, for example, encourage walking or biking to school and involve the entire neighborhood and school community. The primary target audience for such programs includes children in grades K-12, with a preference for schools located in low-income neighborhoods (34).

Efforts to create safe and active routes to school are intended to build physical activity into children’s daily routine. Creating these routes also promotes awareness and advocates for the development of environments that support walking and biking to school safely. These programs depend on the development of partnerships between parents, school staff, city leaders, and physical activity advocates. ♦

Table 1: Washington State Health and Fitness EALRs Assessment Schedule

| Health and Fitness EALRs | Assessments Available for Voluntary Use (School Years) | Assessments Required to be Administered (School Years) |
|--------------------------|--|--|
| Elementary School | 2005-2006 | 2009-2010 |
| Middle School | 2005-2006 | 2008-2009 |
| High School | 2005-2006 | 2008-2009 |

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